What is claimed is:

1. An OFDM receiver cha racterized in that the OFDM receiver comprises four antennas or more for receiving an OFDM modulated high frequency signal, and plural OFDM demodulating means for inputting a base band signal of a time area thereto on the basis of the high frequency signal and outputting the base band signal of a frequency area, wherein the OFDM demodulating means are arranged every plural antenna groups with two or more of the antennas as one group, and a first phase shifter is arranged on the former stage side of each of the OFDM demodulating means, and a second phase shifter is arranged at the latter stage of another OFDM demodulating means except for a specific OFDM demodulating means among the OFDM demodulating means, and a signal is diversity-synthesized by the first phase shifter until the base band signal of the time area is inputted to each of the OFDM demodulating means, and the base band signal of the frequency area is diversity-synthesized by the second phase shifter.

2. The OFDM receiver according to claim 1, w herein the base band signal of the time area based on the high frequency signal received by a specific antenna in each of the antenna groups, and the base band signal of the time area based on the high frequency signal received by

another antenna except for the specific antenna are diversity-synthesized by the first phase shifter.

3. The OFDM receiver according to claim 2, wherein a receiving portion for frequency-converting the high frequency signal to an intermediate frequency signal, and an A/D converter for converting the intermediate frequency signal to a digital signal and outputting the base band signal of the time area are arranged every each of the antennas, and the first phase shifter is arranged at the next stage of the A/D converter corresponding to the another antenna, and a first adder is arranged between the first phase shifter and the A/D converter corresponding to the specific antenna.

4. The OFDM receiver according to claim 1, wherein the intermediate frequency signal based on the high frequency signal received by the specific antenna in each of the antenna groups, and the intermediate frequency signal based on the high frequency signal received by another antenna except for the specific antenna are diversity-synthesized by the first phase shifter.

5. The OFDM receiver according to claim 4, wherein a receiving portion for frequency-converting the high frequency signal to the intermediate frequency signal is arranged every each of the antennas, and the first phase

shifter is arranged at the next stage of the receiving portion corresponding to the another antenna, and a first adder is arranged between the receiving portion corresponding to the specific antenna and the first phase shifter.

6. The OFDM receiver according to claim 1, wherein the high frequency signal received by the specific antenna in each of the antenna groups, and the high frequency signal received by another antenna except for the specific antenna are diversity-synthesized by the first phase shifter.

7. The OFDM receiver according to claim 6, wherein the first phase shifter is connected to the another antenna, and a first adder is arranged between the specific antenna and the first phase shifter.

8. The OFDM receiver according to claim 3, wherein power detecting means for detecting electric power of the base band signal of the time area, and phase control means for controlling phase setting of the first phase shifter so as to maximize the electric power are arranged.

9. The OFDM receiver according to claim 5, wherein power detecting means for detecting electric power of the base band signal of the time area, and phase control means

for controlling phase setting of the first phase shifter so as to maximize the electric power are arranged.

10. The OFDM receiver accordi ng to claim 7, wherein power detecting means for detecting electric power of the base band signal of the time area, and phase control means for controlling phase setting of the first phase shifter so as to maximize the electric power are arranged.

11. The OFDM receiver according to claim 1, wherein the second phase shifter is arranged at the next stage of the another OFDM demodulating means, and a second adder is arranged between the specific OFDM demodulating means and the second phase shifter.

12. The OFDM receiver according to claim 11, wherein the OFDM receiver further comprises phase control means for controlling phase setting of the second phase shifter such that the phase of the base band signal of the frequency area outputted from the second phase shifter is conformed to the phase of the base band signal of the frequency area outputted from the specific OFDM demodulating means.